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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/541,444	03/31/2000	Erik C Cota-Robles	042390.P7920	3693

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Blakely Sokoloff Taylor & Zafman LLP
12400 Wilshire Boulevard
Seventh Floor
Los Angeles, CA 90025

EXAMINER
OPIE, GEORGE L

ART UNIT	PAPER NUMBER
2126	

DATE MAILED: 10/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No. ⬤ 09/541,444	Applicant(s) Cota-Robles
Office Action Summary ⬤	Examiner George L. Opie	Art Unit 2151

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will
  be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this
  communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1) ___ Responsive to communication(s) filed on _____.

2a) ___ This action is **FINAL**.   2b) _X_ This action is non-final.

3) ___ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) _X_ Claim(s) _1-30_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ___ Claim(s) _____ is/are allowed.

6) _X_ Claim(s) _1-8 and 10-29_ is/are rejected.

7) _X_ Claim(s) _9 and 30_ is/are objected to.

8) ___ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ___ The specification is objected to by the Examiner.

10) ___ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ___ The proposed drawing correction filed on _____ is: a) ___ approved b) ___ disapproved.

12) ___ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)_ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

    a) ___ All b) ___ Some * c) ___ None of the CERTIFIED copies of the priority documents have been:

    1. ___ received.

    2. ___ received in Application No. (Series Code / Serial Number) _____.

    3. ___ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ___ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

14) _X_ Notice of References Cited (PTO-892)
15) ___ Notice of Draftsperson's Patent Drawing Review (PTO-948)
16) _X_ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _4-11_.

17) ___ Interview Summary (PTO-413) Paper No(s). _____.
18) ___ Notice of Informal Patent Application (PTO-152)
19) _X_ Other: Text Docs for USP6,421,702 USP6,412,035 USP6,092,095

DETAILED ACTION

1.   Request for copy of Applicant's response on floppy disk:
Please help expedite the prosecution of this application by including, along with
your amendment response in paper form, an electronic file copy in WordPerfect,
Microsoft Word, or in ASCII text format on a 3½ inch IBM format floppy disk.
Please include all pending claims along with your responsive remarks. Only the
paper copy will be entered -- your floppy disk file will be considered a duplicate
copy. Signatures are not required on the disk copy. The floppy disk copy is not
mandatory, however, it will help expedite the processing of your application.
Your cooperation is appreciated.

2.   Claim Objections

Claims 1-3 et al contain parenthetical terms. Claims cannot contain parentheses
except in reference to a figure. To avoid confusion, parentheses should only be
used for reference characters corresponding to elements recited in the drawings
and used in conjunction with the recitation of the same element in the claims.
See MPEP608.01(m). Appropriate correction is required.

3.   Claims 9 and 30 are objected to as being dependent upon a rejected base
claim, but would be allowable if rewritten in independent form including all of the
limitations of the base claim and any intervening claims.

4.   The U.S. Patents used in the art rejections below have been provided as
text documents which correspond to the U.S. Patents. The relevant portions of
the text documents are cited according to page and line numbers in the art
rejections below. For the convenience of Applicant, the cited sections are
highlighted in the *text documents*. Consistent with Office procedure, the U.S.
Patents corresponding to the *text documents* are also included with this action.

5.   Claim Rejections - 35 U.S.C. § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102
that form the basis for the rejections under this section made in this Office
action:

A person shall be entitled to a patent unless

(e) the invention was described in a patent granted on an application for patent
by another filed in the United States before the invention thereof by the applicant

for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6.   Claims 1-3, 5-6, 10-13 and 27 are rejected under 35 U.S.C. § 102(e) as being anticipated by Gulick (U.S. Patent 6,421,702).

As to claim 1, Gulick teaches a method for scheduling a plurality of virtual machines (scheduling of a plurality of isochronous tasks, p7 48 – p8 5) comprising:
determining a respective resource requirement (X) for each virtual machine (VM) (determining the maximum percentage of the operating system bandwidth allocated to isochronous tasks, p12 5-18)
determining a respective interrupt period (Y) for each VM (interrupt is variable based on the interval of the currently executing isochronous tasks, p5 44-51) and
scheduling said plurality of VMs based, at least in part, on said respective X and Y values (scheduler 218 dynamically sets the timer ... and passes control to the first task, p6 12-35).

> As to claims 2-3, Gulic (p3 40-51) teaches "[e]ach isochronous task informs the operating system of an execution interval and a duration."

> As to claims 5-6, note the rejections of claims 2-3 above.

As to claims 10-13, note the discussions of claims 1, 6, 3 and 2 respectively. Claims 10-13 are the same as claims 1, 6, 3 and 2, except claims 10-13 are computer program product claims and claims 1, 6, 3 and 2 are method claims.

As to claim 27, note the rejection of claim 1 above. Claim 27 is the same as claim 1, except claim 27 is an apparatus claim and claim 1 is a method claim.

7.   Claim Rejections - 35 U.S.C. § 103
        The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8.   Claims 4, 7-8, 14-16 and 28-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Gulick in view of Maytal (U.S. Patent 6,092,095).

As to claim 4, Maytal teaches the service manager 50 for maintaining resource requirements (p2 40-45 and pages 6-8). It would have been obvious to combine Maytal's teachings with Gulick because the service manager would facilitate administration efficacy by adjusting resource allocations to each VM as its requirements warrant for acceptable operations and optimal system usage/performance.

As to claim 7, note the rejection of claim 4 above.

As to claim 8, Maytal (p8 27-56) teaches performance monitoring for scheduling and adjusting resource requirements as recited. It would have been obvious to combine Maytal's teachings with Gulick because the monitoring of a VM's actual usage would enable the system to perform resource allocation tuning for continually maximizing the system's capabilities.

As to claims 14-16, note the discussions of claims 4 and 8 above. Claims 14-16 are the same as claims 4 and 8, except claims 14-16 are computer program product claims and claims 4 and 8 are method claims.

As to claims 28-29, note the discussions of claims 4 and 8 supra. Claims 28-29 are the same as claims 4 and 8, except claims 28-29 are apparatus claims and claims 4 and 8 are method claims.

9.   Claims 17-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Webber (U.S. Patent 6,412,035).

As to claim 17, Webber (p5 10-24) teaches the determining interrupt values by initializing the interrupts and generating virtual interrupts, and filtering (Fig. 2, page 5) and adjusting the interrupt period values (page 6 47-52). Although Webber does not explicitly disclose the rejecting aperiodic interrupts, it would have been an obvious modification for one skilled in the art to have included this rejection in the filtering taught by Webber.

As to claims 18-19, Webber (p4 14-40) teaches the scheduling VMs with respect to resource requirement values as claimed.

As to claims 20-21, Webber (p2 38 – p3 9) teaches scheduling VMs contingent on interrupt frequency and resource requirements, and for one skilled in the art, the recited resource requirement adjustments would have naturally flowed from

Webber's interrupt management teachings for handling real-time operations in general purpose operating systems.

10.   The prior art of record and not relied upon is considered pertinent to the applicant's disclosure. Each reference disclosed below is relevant to one or more of the Applicant's claimed invention.
U.S. Patent No. 6,374,286 to Gee et al. which teaches the resource management and scheduling of multiple virtual machines;
U.S. Patent No. 6,075,938 to Bugnion et al. which teaches the virtual machine monitors for coordinating/adjusting VM operations.

11.   Contact Information:

PTO Policy for Facsimile Submissions:
☐   AFTER-FINAL faxes must be signed and sent to (703) 746-7238.
☐   OFFICIAL faxes must be signed and sent to (703) 746-7239.
☐   NON OFFICIAL faxes should be sent to (703) 746-7240.

   All OFFICIAL faxes will be handled and entered by the docketing personnel. The date of entry will correspond to the actual FAX reception date unless that date is a Saturday, Sunday, or a Federal Holiday within the District of Columbia, in which case the official date of receipt will be the next business day. The application file will be promptly forwarded to the Examiner unless the application file must be sent to another area of the Office, e.g., Finance Division for fee charging, etc.

☐   All responses sent by U.S. Mail should be mailed to:
   Commissioner for Patents
   PO Box 1450
   Alexandria, VA 22313-1450

☐   Hand-delivered responses should be brought to Crystal Park Two, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist). All hand-delivered responses will be handled and entered by the docketing personnel. Please do not hand deliver responses directly to the Examiner.

☐   Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist at **(703) 305-9600.**

☐   Any inquiry concerning this communication or earlier communications
from the examiner should be directed to George Opie at (703) 308-9120 or
via e-mail at *George.Opie@uspto.gov*. Internet e-mail should not be used where
sensitive data will be exchanged or where there exists a possibility that sensitive
data could be identified unless there is an express waiver of the confidentiality
requirements under 35 U.S.C. 122 by the Applicant. Sensitive data includes
confidential information related to patent applications.

ZARNI MAUNG
PRIMARY EXAMINER